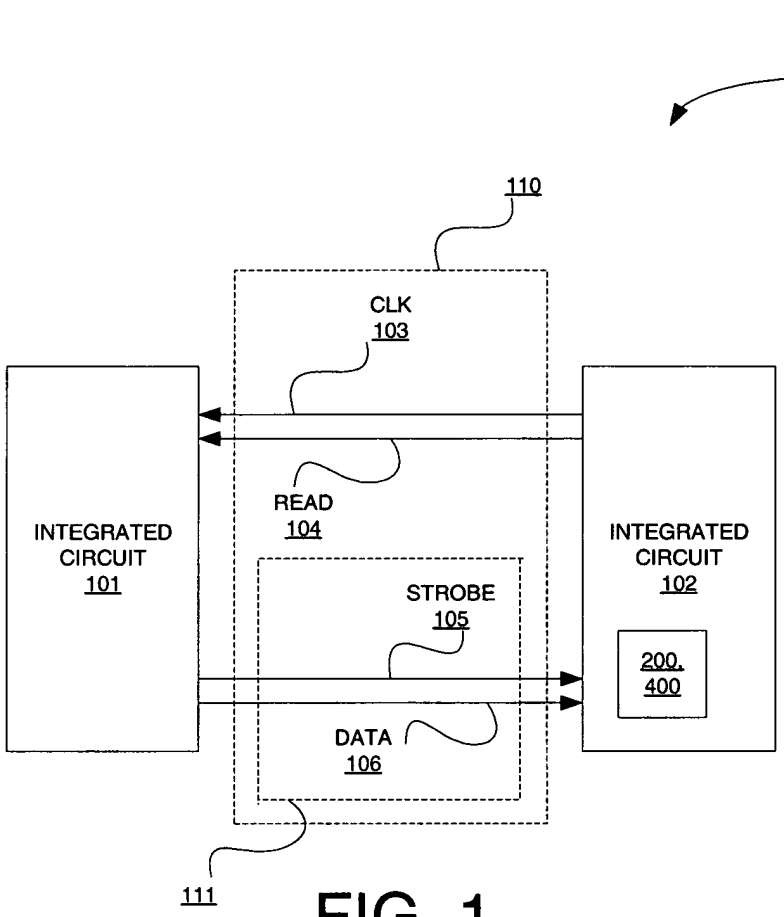
IC
SYSTEM
100
110
CLK
103
READ
104
INTEGRATED
CIRCUIT
101
STROBE
105
DATA
106
INTEGRATED
CIRCUIT
102
200,
400
111

FIG. 1

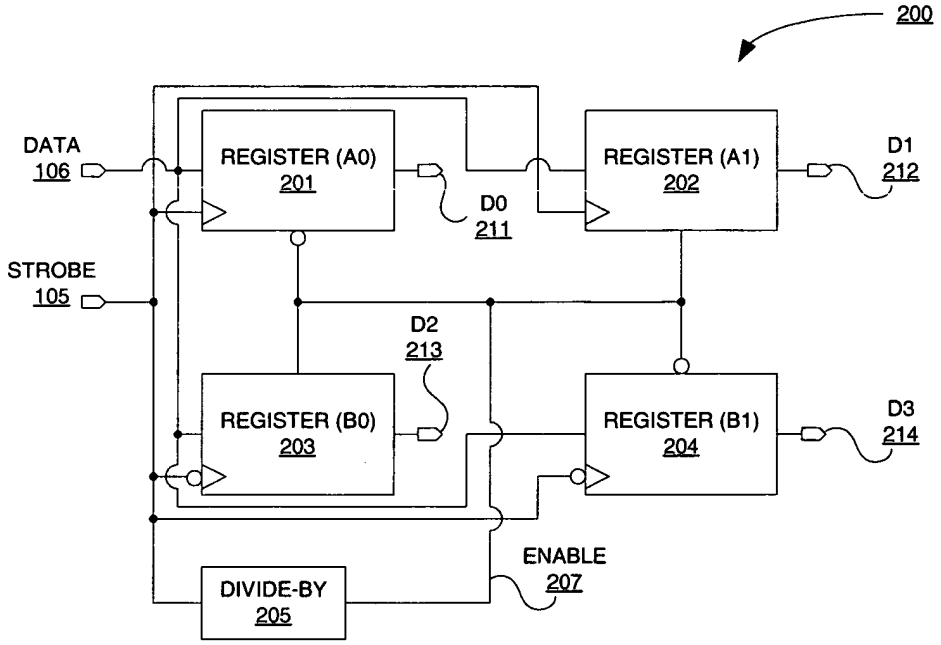
200
DATA
106
REGISTER (A0)
201
D0
211
REGISTER (A1)
202
D1
212
STROBE
105
D2
213
REGISTER (B0)
203
REGISTER (B1)
204
D3
214
ENABLE
207
DIVIDE-BY
205

FIG. 2A

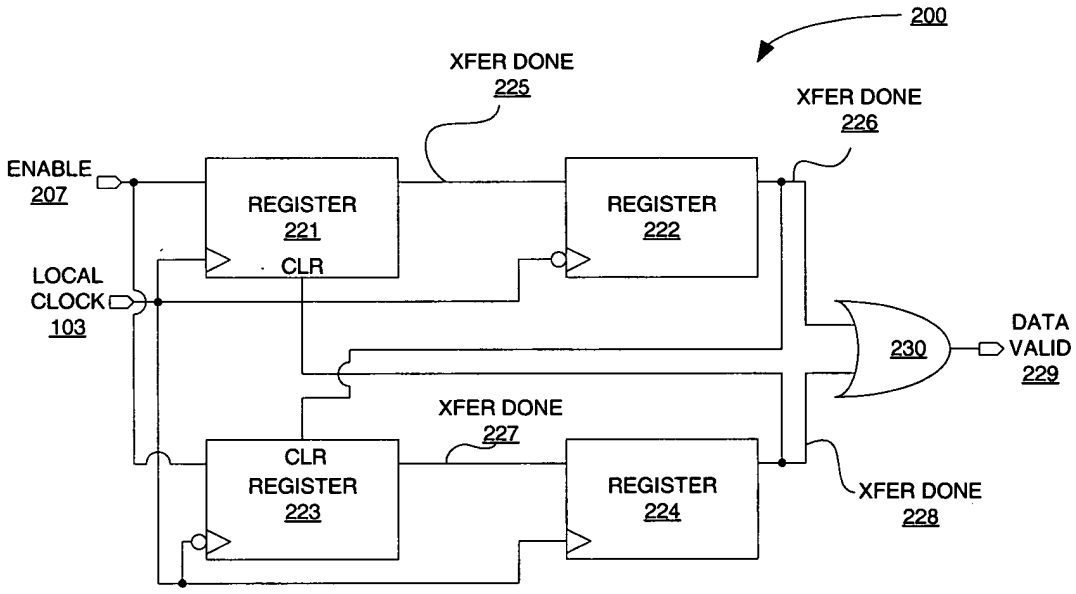
200
XFER DONE
225
XFER DONE
226
ENABLE
207
REGISTER
221
CLR
REGISTER
222
LOCAL
CLOCK
103
230
DATA
VALID
229
XFER DONE
227
CLR
REGISTER
223
REGISTER
224
XFER DONE
228

FIG. 2B

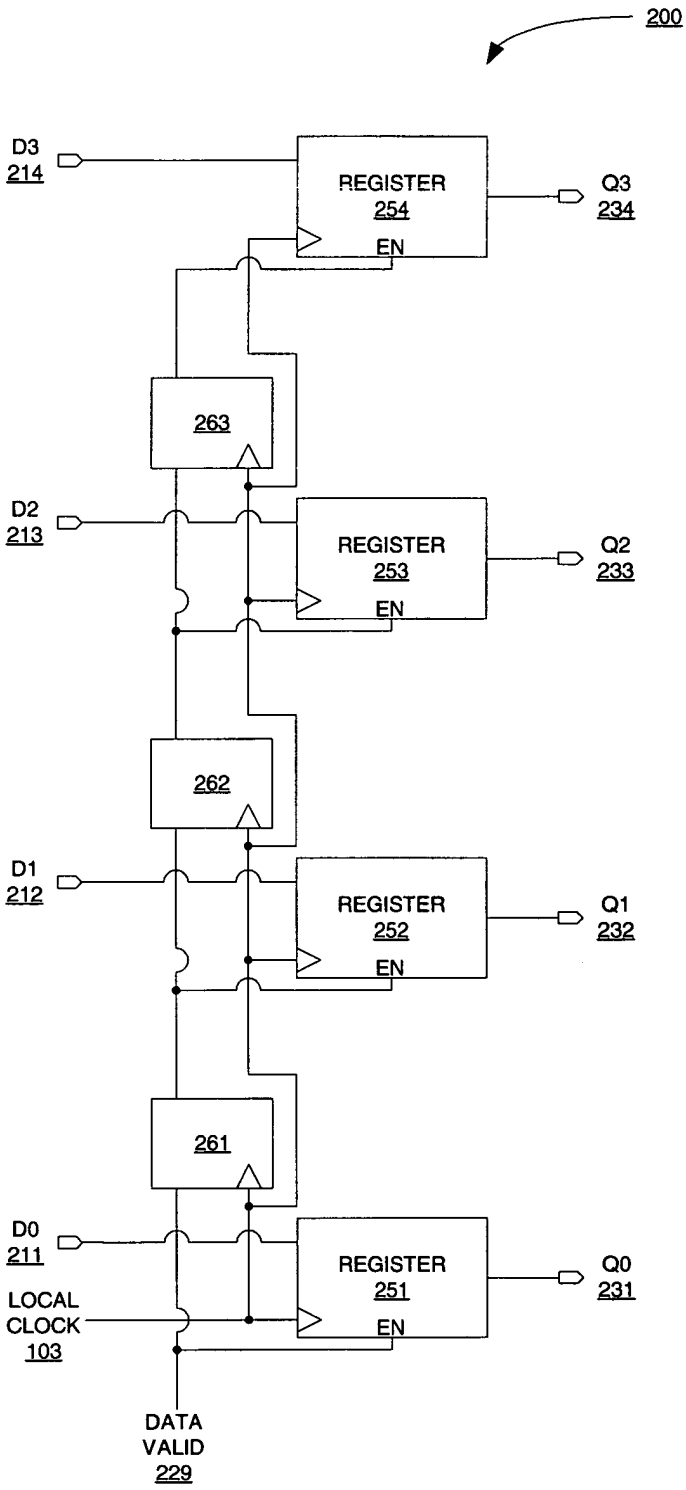
200
D3
214
REGISTER
254
EN
Q3
234
263
D2
213
REGISTER
253
EN
Q2
233
262
D1
212
REGISTER
252
EN
Q1
232
261
D0
211
REGISTER
251
EN
Q0
231
LOCAL
CLOCK
103
DATA
VALID
229

FIG. 2C-1

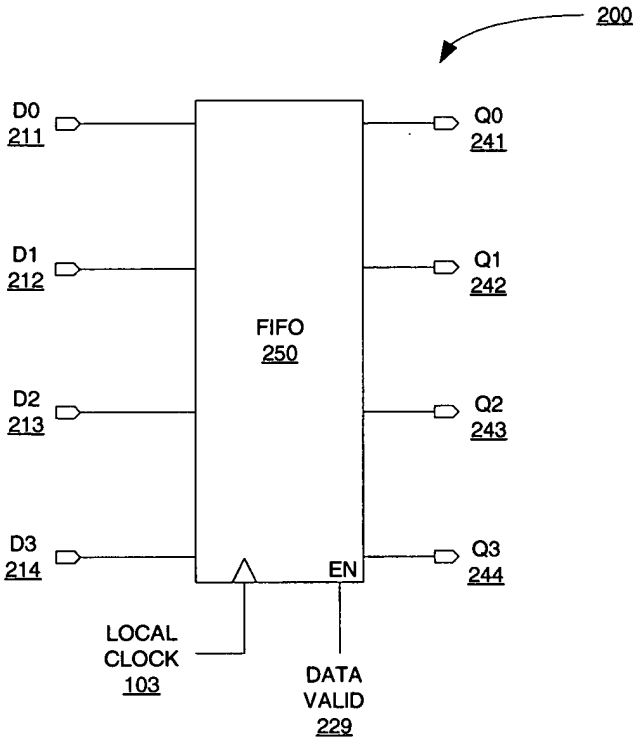
200
D0
211
D1
212
D2
213
D3
214
FIFO
250
EN
Q0
241
Q1
242
Q2
243
Q3
244
LOCAL
CLOCK
103
DATA
VALID
229

FIG. 2C-2

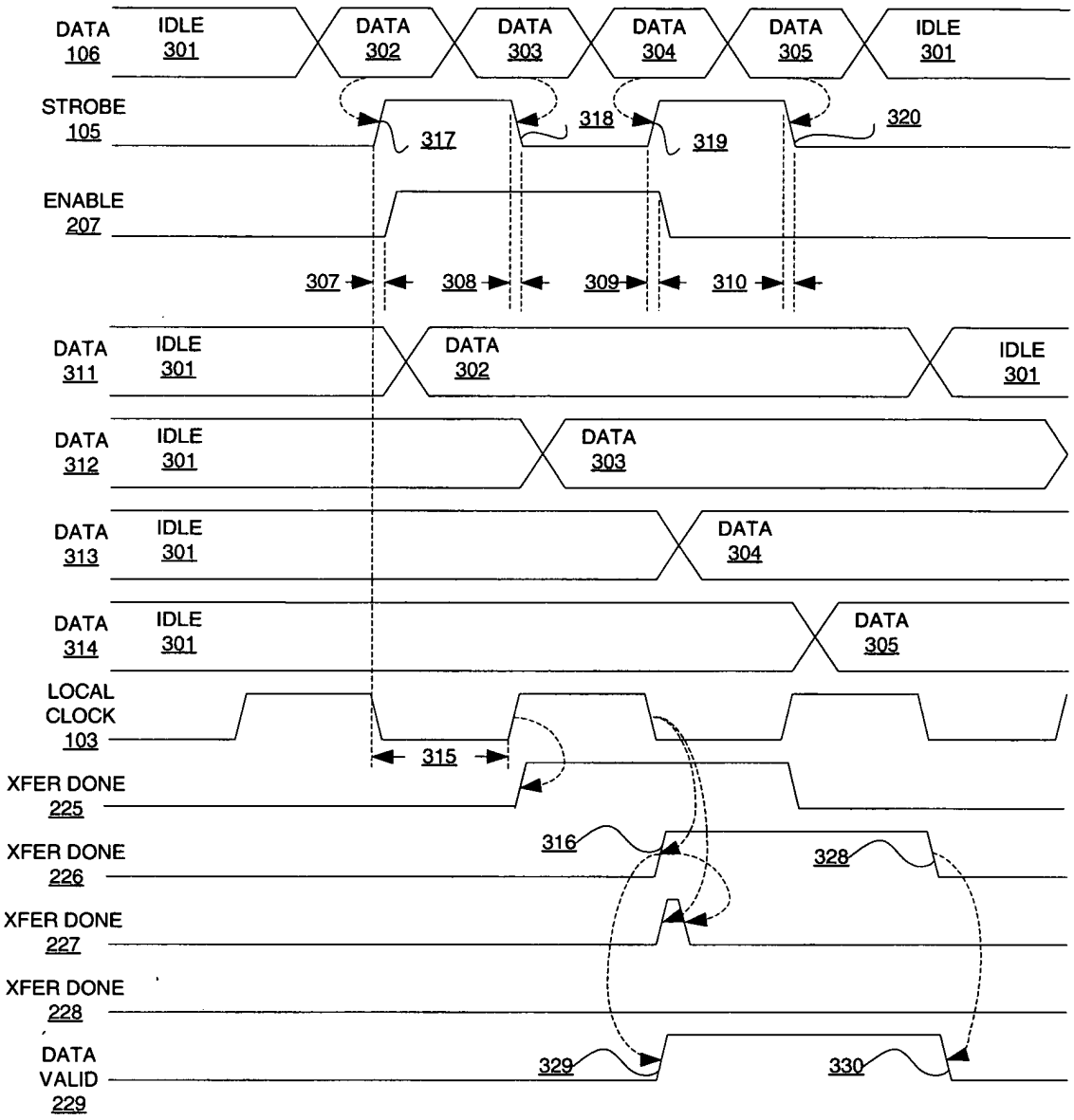
DATA 106
IDLE 301
DATA 302
DATA 303
DATA 304
DATA 305
IDLE 301
STROBE 105
317
318
319
320
ENABLE 207
307
308
309
310
DATA 311
IDLE 301
DATA 302
IDLE 301
DATA 312
IDLE 301
DATA 303
DATA 313
IDLE 301
DATA 304
DATA 314
IDLE 301
DATA 305
LOCAL CLOCK 103
315
XFER DONE 225
316
XFER DONE 226
328
XFER DONE 227
XFER DONE 228
DATA VALID 229
329
330

FIG. 3

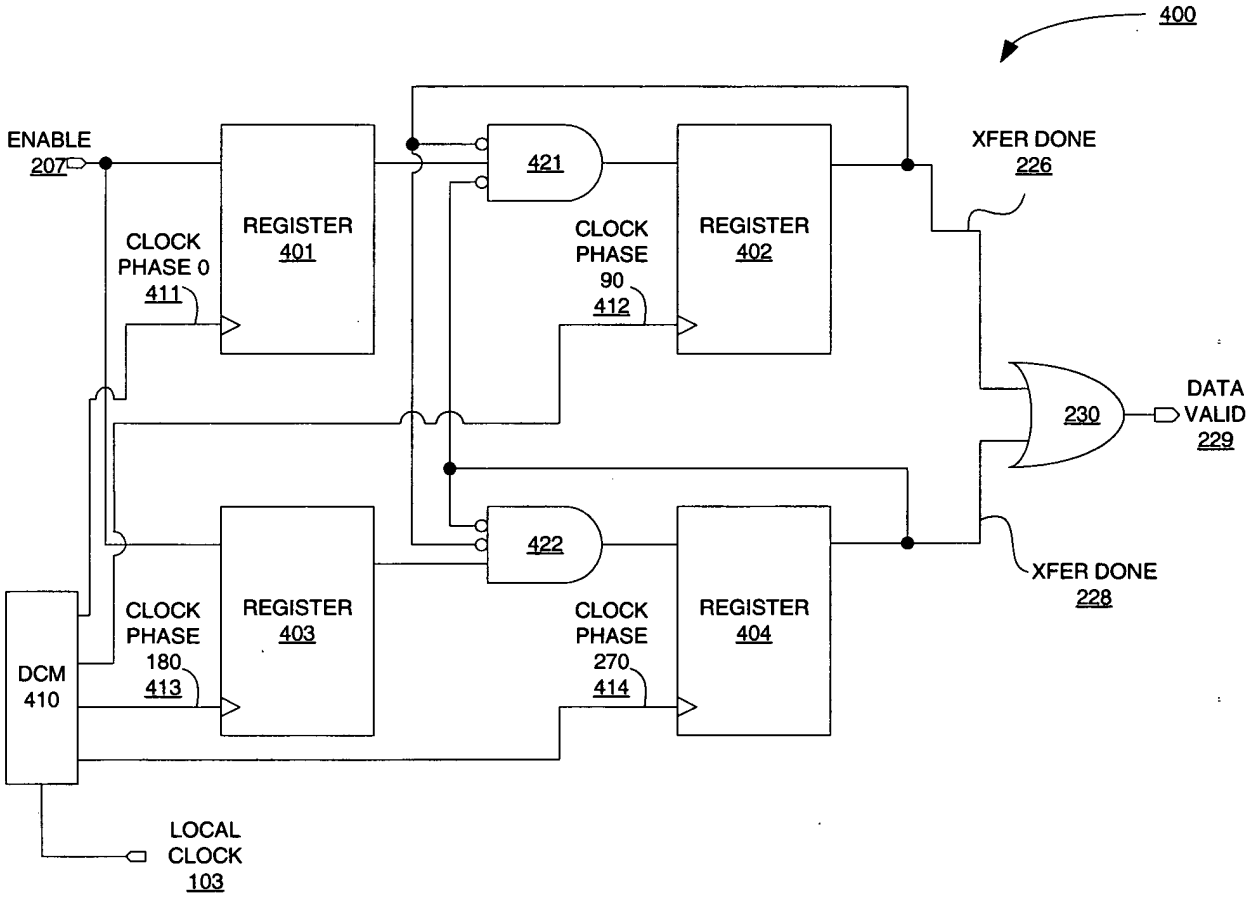
400
ENABLE
207
REGISTER
401
CLOCK
PHASE 0
411
421
CLOCK
PHASE
90
412
REGISTER
402
XFER DONE
226
230
DATA
VALID
229
422
XFER DONE
228
REGISTER
403
CLOCK
PHASE
180
413
REGISTER
404
CLOCK
PHASE
270
414
DCM
410
LOCAL
CLOCK
103

FIG. 4

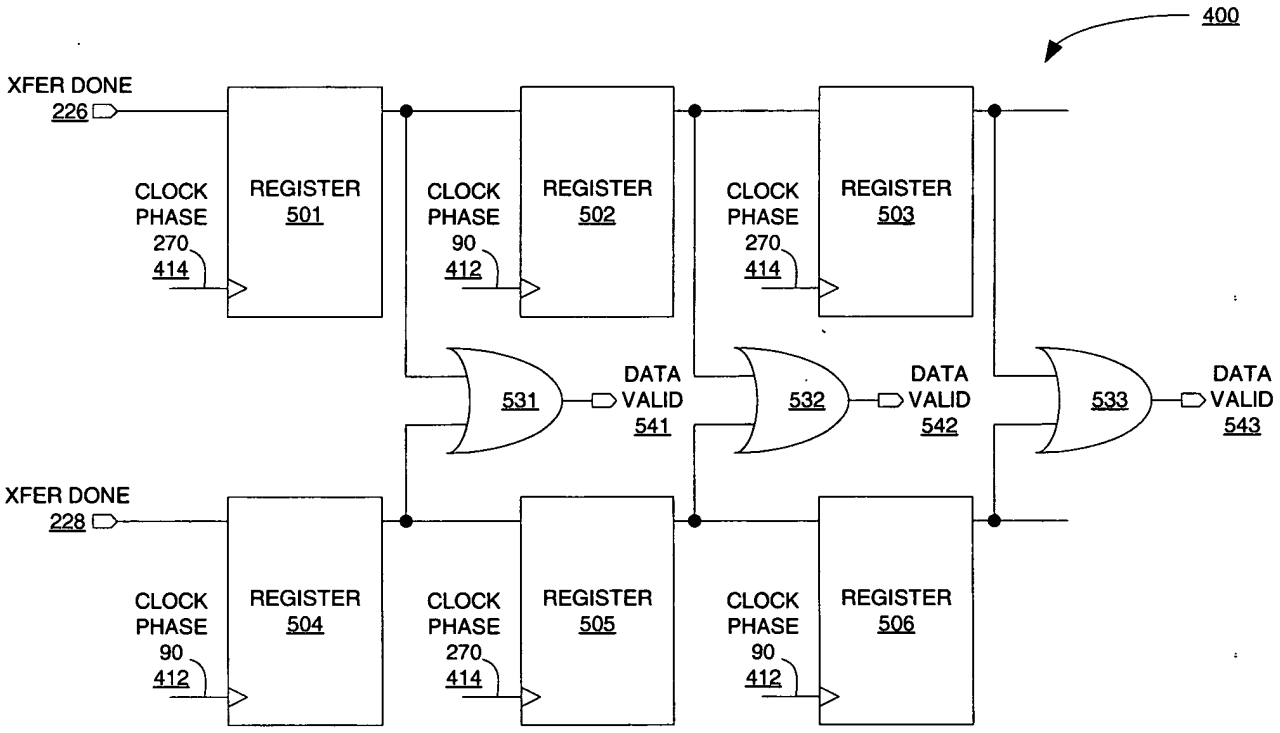
400
XFER DONE
226
CLOCK PHASE 270 414
REGISTER 501
CLOCK PHASE 90 412
REGISTER 502
CLOCK PHASE 270 414
REGISTER 503
531
DATA VALID 541
532
DATA VALID 542
533
DATA VALID 543
XFER DONE
228
CLOCK PHASE 90 412
REGISTER 504
CLOCK PHASE 270 414
REGISTER 505
CLOCK PHASE 90 412
REGISTER 506

FIG. 5

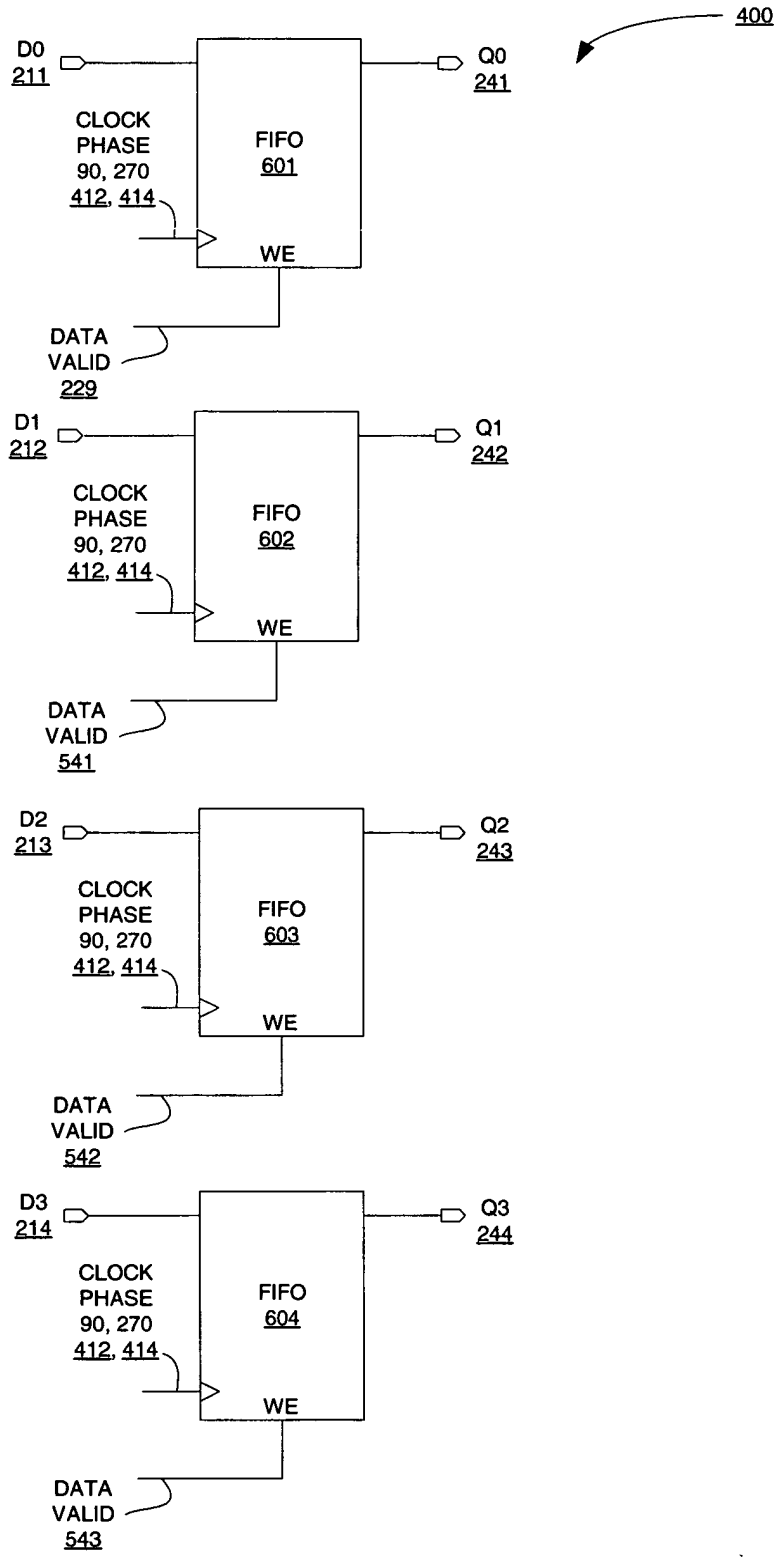
400
D0
211
Q0
241
CLOCK
PHASE
90, 270
412, 414
FIFO
601
WE
DATA
VALID
229
D1
212
Q1
242
CLOCK
PHASE
90, 270
412, 414
FIFO
602
WE
DATA
VALID
541
D2
213
Q2
243
CLOCK
PHASE
90, 270
412, 414
FIFO
603
WE
DATA
VALID
542
D3
214
Q3
244
CLOCK
PHASE
90, 270
412, 414
FIFO
604
WE
DATA
VALID
543

FIG. 6

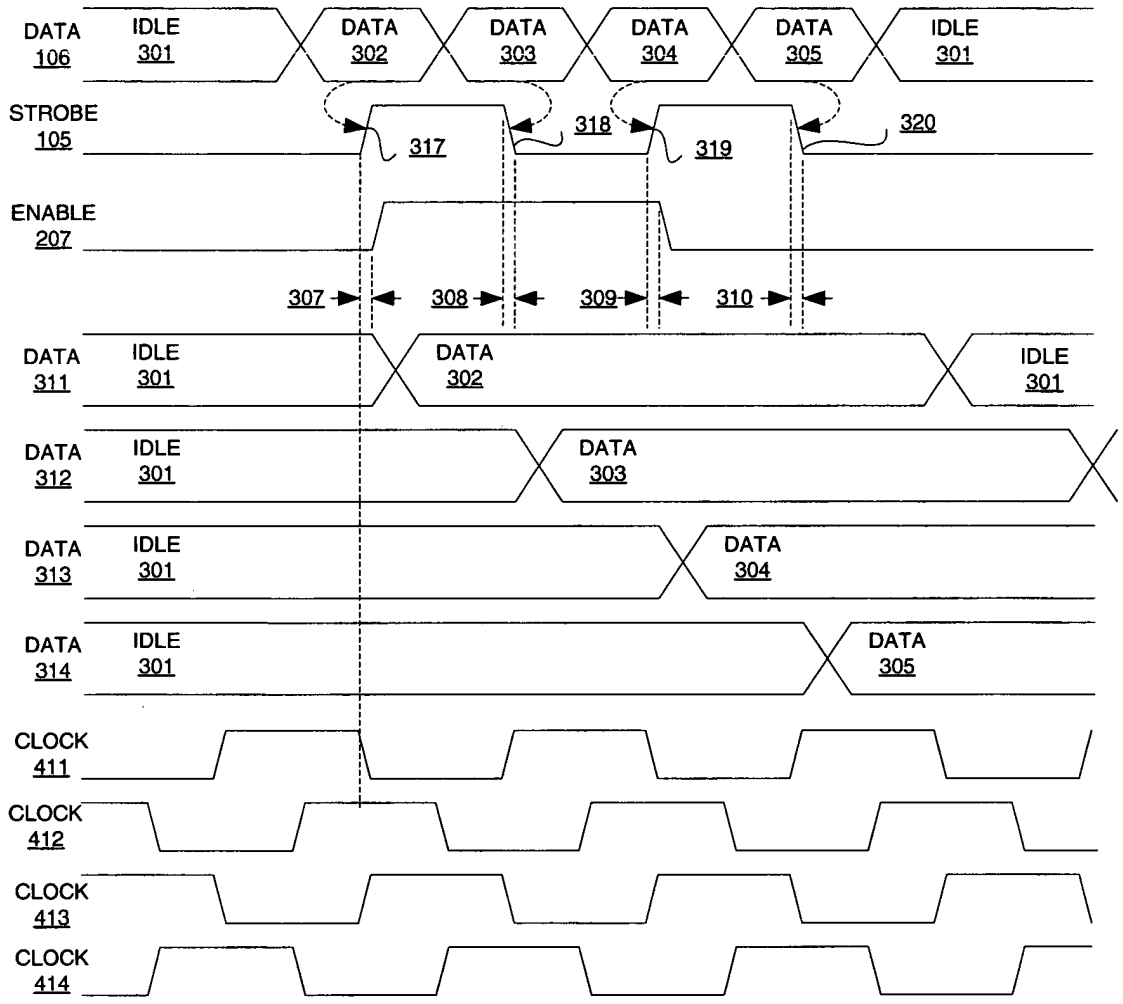
DATA
106
IDLE
301
DATA
302
DATA
303
DATA
304
DATA
305
IDLE
301
STROBE
105
317
318
319
320
ENABLE
207
307
308
309
310
DATA
311
IDLE
301
DATA
302
IDLE
301
DATA
312
IDLE
301
DATA
303
DATA
313
IDLE
301
DATA
304
DATA
314
IDLE
301
DATA
305
CLOCK
411
CLOCK
412
CLOCK
413
CLOCK
414

FIG. 7